UNITED STATES
NUCLEAR REGULATORY COMMISSION
REGION II
101 MARIETTA STREET, N.W.
ATLANTA, GEORGIA 30303

Report Nos.: 50-413/84-46 and 50-414/84-22

Licensee: Duke Power Company
422 South Church Street
Charlotte, NC 28242

Docket Nos.: 50-413 and 50-414 License Nos.: CPPR-116 and CPPR-117

Facility Name: Catawba 1 and 2

Inspection Dates: April 24-27, 1984

Inspection at Catawba site near Rock Hill, South Carolina

Inspectors: M D Hunt 5/25/84
M. D. Hunt Date Signed

T E Conlon for 5/25/84
W. H. Miller, Jr. Date Signed

P A Taylor 5/25/84
P. A. Taylor Date Signed

G R Wiseman 5/24/84
G. R. Wiseman Date Signed

Accompanying Personnel: T. E. Conlon

Approved by: T E Conlon 5/25/84
Thomas E. Conlon, Section Chief Date Signed
Engineering Branch
Division of Reactor Safety

SUMMARY

Scope: This routine, announced inspection involved 140 inspector-hours on site in the areas of: Licensee action on previous enforcement matters; the Standby Shutdown Facility (SSF), including a review of procedures for preoperational testing and, the overall operation of the SSF and associated systems; the Standby Shutdown Systems (SSS), as related to their safe shutdown capabilities including a review of systems equipment, instrumentation and cable routings to assure adequate fire separation and functional capabilities; the fire prevention/protection modifications provided for the SSS and SSF including a review of the design, testing, and installation of cable fire barrier wraps, fire barrier penetration seals and associated fire detection and suppression systems required by 10 CFR 50 Appendix R.

Results: Of the areas inspected, no violations or deviations were identified.

REPORT DETAILS

1. Persons Contacted

Licensee Employees

*E. M. Couch, Project Administrator
*J. W. Cox, Superintendent of Technical Services
*L. R. Davison, Duke Project QA Manager
*H. D. Brandes, Design Engineering
*D. F. James, Quality Assurance
*J. R. Hendricks, Design Engineering
*W. N. Matthews, Design Engineering
W. Beaver, Performance Engineer
M. Canvile, Test Coordinator
*D. Kimball, Associate Engineer - Operating Procedures Development
J. Knuti, Operating Engineering
*D. P. Hensley, QA Technician
*D. V. Ethington, QA Technical Services
*T. B. Bright, Construction Engineering
*J. M. Rucci, Design Engineering
*R. A. Morgan, Senior QA Engineer
*T. H. Propst, Construction Technician
*K. W. Schmidt, QA Engineer
B. Doland, Design Engineering
R. Gambery, Design Engineering
J. Ray, Design Engineering
M. Snow, Technical Support
W. Barron, Senior Training Instructor

NRC Resident Inspectors

*P. K. VanDoorn
*P. Skinner

*Attended exit interview.

2. Exit Interview

The inspection scope and findings were summarized on April 27, 1984, with those persons indicated in paragraph 1 above. The licensee acknowledged the following inspection findings:

a. Unresolved Item (413/84-46-01), Standby Makeup Pump Capacity for Primary Side Volume Control - paragraph 5.a.(2).

b. Unresolved Item (413/84-46-02), Standby Shutdown Facility and Systems Operating Procedures - paragraph 5.a.(3).

c. Unresolved Item (413/84-46-03), Position Verification of Spent Fuel Pool Transfer Tube Isolation Valve - paragraph 5.a.(4).a).

d. Unresolved Item (413/84-46-04), Spent Fuel Pool Boron Concentration Sampling - paragraph 5.a.(4).b).

e. Unresolved Item (413/84-46-05), RCS Process Monitoring for SSF Operation - paragraph 5.a.(4).c).

f. Unresolved Item (413/84-46-06 and 414/84-22-01), Technical Specifications for SSF and SSS - paragraph 5.a.(4).d)

g. Unresolved Item (413/84-46-07), Standby Makeup System FSAR Update to "As-Built" Status and complete system installation - paragraph 5.a.(4).e).

h. Unresolved Item (413/84-46-08), Scale Range for SSF Standby Makeup Pump Flowrate Indicator is Inadequate - paragraph 5.a.(4).f).

i. Inspector Followup Item (413/84-46-09), SSS Potential Electrical Discrepancies - paragraph 5.b.(1) and (2).

j. Unresolved Item (413/84-46-10), Reevaluation of SSF Diesel Generator Sprinkler System Operation During Cold Weather - paragraph 5.c.(1).

k. Unresolved Item (413/84-46-11), Reevaluation of Fuel Oil Line Arrangement to SSF Diesel Engine - paragraph 5.c.(2).

l. Unresolved Item (413/84-46-12), Evaluation of Fire Barrier Requirements for Turbine Driven Auxiliary Feedwater Pump Room - paragraph 5.c.(4).

m. Unresolved Item (413/84-46-13), Possible Failure to Provide Fire Protection Features for Redundant Shutdown Cables - paragraph 5.c.(6).

n. Unresolved Item (413/84-46-14), Possible Deviation From a Commitment on Combustibility of Thermal Insulation Material - paragraph 5.c.(7).

Note: The above items are not identified as enforcement items since these are not required to be in place or operational until after fuel load of the respective unit at this facility.

3. Licensee Action on Previous Enforcement Matters

a. (Closed) Unresolved Item (413/84-11-02 and 414/84-07-01), Fire Protection Piping Systems Over Safety-Related Equipment Are Not Seismically Supported. The inspectors reviewed the licensee's program for identification and support of non-seismic piping installed over safety-related equipment including the criteria within Duke's Report No. MDPE-PR-82-1, Non-Seismic Piping and Equipment Interaction Analysis Criteria for Catawba Nuclear Station. This program appeared adequate to assure that non-seismic fire protection piping over safety equipment will be adequately supported to prevent damage to safety equipment in the event of a seismic event. This item is closed.

b. (Closed) Unresolved Item (413/84-11-03), Verification of QC Welding Inspection of Fire Protection System IRF-7: Nonconformance Report 18053 has been issued on this discrepancy. The Duke design organization has reviewed this item and determined that the hydrostatic pressure test provided sufficient assurance that the piping system will properly function. No additional pipe inspection or welding inspections are to be conducted on this system by Duke. This action appears acceptable; therefore, this item is closed.

c. (Closed) Unresolved Item (413/84-11-04), Verification of QC Inspection of Underground Piping for the Diesel Generator Carbon Dioxide System. Duke's construction group has evaluated this piping and determined that the pipe is not properly coated. This piping is to be cleaned and recoated. The modification is to be verified by the QC organization; therefore, this item is closed.

d. (Closed) Unresolved Item (413/84-11-05), Unapproved Hardware on Locking Type Fire Doors. The hardware on locking type fire doors has been modified such that all fire doors are to be equipped with hardware that will be of the positive latching type both when the doors are locked and unlocked. Fire doors will be further reviewed during subsequent NRC inspection; therefore, this item is closed.

4. Unresolved Items

Thirteen (13) unresolved items were identified during this inspection.

5. 10 CFR 50 Appendix R, Section III.G. Fire Protection Program Implementation (TI/2515/62)

This inspection was to ascertain the licensee's action towards implementation of the fire protection and plant safe shutdown requirements of 10 CFR 50, Appendix R.

Effective February 17, 1981, the Nuclear Regulatory Commission amended its regulations by adding Section 50.48 and Appendix R to 10 CFR 50 to require certain provisions for fire protection in operating nuclear power plants. This action was taken to resolve certain contested generic issues in Fire Protection Safety Evaluation Reports (SERs) and to require all applicable licensees to upgrade their plants to a level of protection equivalent to the technical requirements of Appendix R, Section III.G.

10 CFR 50, Appendix R, Section III.G.1., requires that fire protection features shall be provided which are capable of limiting fire damage so that one train of equipment, cabling, and associated circuits necessary to achieve and maintain hot shutdown conditions from either the control room or the emergency control station is free of fire damage. Sections III.G.2 and

III.G.3 specify four alternatives for assuring that one redundant train of equipment, cabling, and associated circuits necessary to achieve and maintain hot shutdown remains free of fire damage. These alternatives are:

(1) Separation of redundant trains of equipment, cabling, and associated circuits by a 3-hour rated fire barrier.

(2) Separation of redundant trains of equipment, cabling, and associated circuits by a 1-hour rated fire barrier with fire detection and automatic fire suppression systems installed in the area.

(3) Separation of redundant trains of equipment, cabling, and associated circuits, by a horizontal distance of 20 feet with no intervening combustibles, and fire detection and automatic fire suppression systems installed in the area.

(4) Installation of alternative or dedicated shutdown capability independent of the equipment, cabling, and associated circuits under consideration, and installation of fire detection and fixed fire suppression systems in the area under consideration.

In a May 1, 1978 submittal, Duke Power Company provided to NRR a conceptual description of the SSF for McGuire Nuclear Station. A similar facility has been provided at Catawba.

Duke Power Company submitted to the NRC for their review and evaluation, a letter dated July 5, 1983, which provides a detailed description of the Standby Shutdown Facility and Standby Shutdown System (SSF/SSS). The letter identified the purpose of the SSF/SSS as being an alternate and independent means to achieve and maintain the reactor coolant system in a hot standby condition for one or both units at the Catawba Station. In addition, the SSF/SSS would be operated only if a postulated fire or sabotage event resulted in the installed normal and emergency plant systems becoming inoperable.

The SSF is a steel framed, masonry structure which is located adjacent to and outside of the plant. This building houses the following major equipment and controls: Diesel Generator, batteries, and supporting auxiliary systems. Normal electrical power is supplied to the SSF/SSS via a 6.9 kv site transformer. Emergency power for the SSF/SSS is available by manual starting of the diesel generator.

The SSF Control Room is equipped with panels to provide alarms and annunciator readout for diesel generator parameters, controls for starting, stopping, and synchronizing the diesel generator, controls for starting, stopping, and positioning SSF/SSS pumps, valves, and pressurizer heaters. Indication for monitoring plant parameters such as reactor coolant system pressure, pressurizer level, incore thermocouple readout, steam generator water level, standby makeup pump flow indication and controls for operating the steam driven auxiliary feedwater pump are also provided.

In the event that the SSF/SSS is required to be used, a transfer of control function from the plant control room is manually performed in the train "A" switchgear room for selected pumps, components, and valves installed in plant systems. This action will allow this equipment to be operated from the SSF control room. The operator(s) at the SSF can maintain reactor coolant system volume and pressure control by utilizing the positive displacement standby makeup pump located in the containment building annulus. This pump takes a suction from the spent fuel pool transfer tube area and discharges through a five micron filter into each reactor coolant pump seal injection line, hence providing makeup water to the reactor coolant and protection for the reactor coolant pump seals. Letdown for pressurizer level control is provided by the rector vessel head vent valves which discharge to the pressurizer relief tank. Reactor coolant system pressure control is provided by manual operation of a bank of pressurizer heaters. Steam generator volume control and decay heat removal is accomplished by utilizing the turbine driven feedwater pump to maintain steam generator water level requirements and the lifting of the main steam relief valves to dump steam to the atmosphere, thus providing for decay heat removal from the reactor coolant system.

a. Preoperational Testing and Operation of the SSF and SSS

The areas that the inspectors reviewed pertained to personnel training, preoperational testing of the SSF/SSS and the issuance and use of operating procedures as these activities relate to the SSF and SSS operations. These areas were reviewed to determine if the requirements of Appendix R for hot standby conditions are being met and also the readiness of the SSF/SSS for operation.

(1) Personnel Training

The inspectors held discussions with the Senior Instructor for Operator Training to determine what training is being provided concerning the control and operation of the SSF and SSS. It was determined that personnel who are receiving training included senior reactor operators (SROs), reactor operators (ROs), and nuclear equipment operators (NEOs). The licensee has scheduled classroom study, system walkdown qualification and walk-through of SSF/SSS operating procedures. The inspectors reviewed the licensee's lesson plans, system walkdown qualification standards and training schedules, and found these documents to be well organized, detailed and comprehensive. In addition, the inspectors reviewed SRO, RO training records, completed written test results and interviewed operating personnel and verified that adequate training for the SSF/SSS was being provided.

(2) Preoperational Testing

The inspectors reviewed the following preoperational test procedures and verified that comprehensive testing of the SSF/SSS had been provided.

- TP 1/A/1350/07, Standby Shutdown Diesel System Functional Test

  The purpose of this test procedure is to verify the proper operation of the diesel generator trip mechanism, alarm setpoints, overspeed protection, SSF ventilation system and the diesel generator's auxiliary systems. In addition, operational testing of the diesel generator included cold and hot starts, 24-hour full load operations fuel consumption and fuel oil storage capacity checks.

The test procedure has recently been completed and is being sent to plant management for review and approval.

- TP 1/B/1350/22, 600V SSF Normal Auxiliary Power System Test

  The purpose of this test procedure is to verify the closing and trip function of various electrical breakers such as 6.9 KV feeder breaker, 600V SSF load center breaker , 600V SSF motor control center breaker, 600V SSF MCC feeder breaker to MCC's 1EMX, 2EMX, and the diesel generator break In addition, breaker protective relays are tested. The voltages on the load centers and motor control centers are also verified to be within the specified limits.

  This test procedure has been satisfactorily completed, reviewed and approved by plant management.

- TP 1/A/1400/13, SSF/SSS Functional Test

  The purpose of this test procedure is to verify that upon transfer of control from the control room to the SSF control panel that specified valves move to their closed positions. Electrically operated valves are controlled from the SSF control panel, and condenser circulating, water and auxiliary feedwater pump suction valves can be operated from the SSF control panel. Pump operation from the SSF control panel include the standby makeup pump, sump pumps and turbine driven auxiliary feedwater pump. A selected bank of pressurizer heaters are also verified to be operational from the SSF control panel.

  The licensee has completed approximately 70% of the testing required by the test procedure.

  The inspectors noted as a result of reviewing the data for the standby makeup pump capacity test that a value of 25 gpm was obtained. The July 5, 1983 letter from the licensee to NRR specifies in attachment 3 (page 4) that the standby makeup pump delivers 26 gpm to the reactor coolant pump seals injection lines with approximately 18 gpm for RCP seal leakage and 8 gpm for reactor coolant system makeup. The licensee stated that the aforementioned figures were in error; that the RCP seal leakage would be 3.5 gpm for each RCP, equalling 14 gpm and makeup water to the RCS would be 12 gpm. It should be noted that the return line from the RCP seals to the volume control tank is isolated during SSF operation. The 14 gpm flow from the RCP seals would leave the system via the 150 psi relief valve that is installed in the RCP seal water return line. The relief valve discharge is directed to the pressurizer relief tank and the 14 gpm flow is not available to the RCS as makeup water. Technical Specifications (TS) require that identified and unidentified leakage from the RCS not exceed 11 gpm. The result of these figures (25 gpm - 14 gpm seal leakage - 11 gpm TS leakage) provides a zero balance between the makeup supply and the out leakage from the RCS. It should be noted, however, that the above conditions are absolute optimum conditions and any appreciable RCS shrinkage and/or RCP seal leakage beyond 3.5 gpm (which is ideal) will result in a decrease in reactor coolant system volume.

The inspector's concern is whether the capacity of the standby makeup pump is sufficient to maintain reactor coolant system inventory as required by 10 CFR 50, Appendix R, Section III.L.1(b). This matter is identified as Unresolved Item (413/84-46-01), Standby Makeup Pump Capacity for Primary Side Volume Control, pending NRR/ASB review of the system design for issuance of the Safety Evaluation Report.

(3) Review of Operating Procedure for the SSF/SSS.

The inspectors reviewed the following operating procedures which have been identified for use when the SSF/SSS is activated:

- OP/O/B/6350/11, SSF Diesel Operations
- OP/O/B/6350/12, 250/125 VDC SSF Auxiliary Power System
- OP/O/B/6100/13, SSF Operations

As a result of reviewing the operating procedures, the inspectors had comments concerning OP/O/B/6100/13 as follows:

a) Specify steam generator levels that are required to be maintained.
b) Specify pressurizer levels that are required to be maintained.
c) Expand and clarify incore thermocouple readouts in the SSF to identify how the operator is to use this information.
d) Add a step to the procedure to verify that control has been tranferred to the SSF.

e) Identify how many operators will be required to man the SSF and also other areas such as train "A" switchgear room where transfer of control to the SSF is accomplished.

f) Add a step to periodically read the D/P gage across the installed strainer to check for clogging.

These items are identified as Unresolved Item (413/84-46-02), SSF and SSS Operating Procedures. The licensee is to revise the Operating Procedures. These will be reviewed during a subsequent NRC inspection.

(4) Review of Overall Operational Capability of the SSF/SSS

The inspectors conducted walk throughs of the SSF/SSS, interviewed operational and design personnel to determine the overall operational capability of the SSF/SSS.

These inspections resulted in the following additional concerns which require resolution:

a) Valve 1KF122, spent fuel pool transfer tube isolation valve, is required to be open in order to provide a source of water to the standby makeup pump. In order to provide the necessary assurance that this valve will be open when required, it should be locked open and independent verification performed. This matter is identified as Unresolved Item (413/84-46-03), Position Verification of Spent Fuel Pool Transfer Tube Isolation Valve.

b) Spent Fuel Pool boron concentration needs to be verified in order to assure that the concentration is maintained at the required levels for SSF/SSS use. The licensee is preparing a change to chemistry procedures to require sampling the spent fuel pool for boron concentration three times a week with boron required to be $\geq$2000 ppm. This matter is identified as Unresolved Item (413/84-46-04), Spent Fuel Pool Boron Concentration Sampling.

c) Procedural guidelines for sampling the reactor coolant system for boron concentration when the SSF/SSS has been put into operation need to be identified. This is necessary in order to determine reactivity shutdown margin. This item is identified as Unresolved Item (413/84-46-05), RCS Process Monitoring for SSF Operation.

d) The licensee i preparing a TS section which should identify: when the SSF/SSS is needed to be operable; what actions are required to be taken if the SSF/SSS becomes inoperable; and, what surveillances should be performed and at what frequency. This item is identified as Unresolved Item (413/84-46-06 and 414/84-22-01), TS for Safe Shutdown Facility and Systems.

e) Drawing CL-1554 1.8 shows a differential pressure gage installed across a strainer in the discharge of the standby makeup pump. This gage is not presently installed. Figure 9.3.4-9 of the FSAR shows a filter installed in the discharge side of the makeup pump while a strainer is actually installed in the system. FSAR Figure 9.3.4-9 needs to be corrected to show actual system conditions. This item is identified as Unresolved Item (413/84-46-07), Standby Makeup System FSAR Update to "As-Built" Status and complete system installation.

f) Attachment 3 of Duke Power Company submittal dated July 5, 1983, describes the SSS. Section 3.3.3.4.1 details the instrumentation at the SSF control panel for the Standby Makeup Pump discharge flowrate. The installed instrument for this function has a scale with a range of 0-26 gpm. This scale range coincides with the design flow rating of the pump. Normal practice is to provide instrumentation that reads the normal operating indication at or near the midscale range of the instrument. This item is identified as Unresolved Item (413/84-46-08), Scale Range for SSF Standby Makeup Pump flow rate indicator is inadequate.

b. Standby Shutdown Systems (SSS) Cables

The inspectors examined the installation of the SSS cables to verify separation and routing as indicated on installation drawings. It should be noted that these cables are not classified as safety related and therefore did not require full inspection under the scope of the QA inspection program. In some instances, the licensee has incorporated certain safety related cables (identified by * in the ID number) as part of the SSS. These cables were installed and documented in accordance with the QA requirements for safety related cables.

(1) Cable Walkdown

The following installed cables were examined to verify adequate separation as required by the criteria defined in 10 CFR 50, Appendix R:

Cable No.	Purpose
1CF675	Steam Generator "B" Level Signal
1XCF501	Steam Generator "B" Level Signal
1CF674	Steam Generator "A" Level Signal
1*CF509	Steam Generator "A" Level Signal
1*CF666	Steam Generator "C" Level Signal
1*CF503	Steam Generator "C" Level Signal
1*CF512	Steam Generator "D" Level Signal
1*CF664	Steam Generator "D" Level Signal

The inspectors verified the routing of the above listed cables and found them to be routed in the annulus area in accordance with Drawing Nos. CN 1918-01.01 and CN 1918-02.01.

The power cable (INV758) from the Motor Control Center (MCC) SMXG located in the SSS facility to the emergency makeup pump located in the annulus was traced from the exit point at the annulus to the MCC in the SSS facility and found to be installed and routed in accordance with the routing card.

The following miscellaneous power and control cables were found routed in the same or adjacent cable trays. Various areas of the plant were examined to verify that separation requirements had been accomplished:

Cable No.	Purpose
1*NV743	Power Cable
1*NV768	Control Cable
1*ATC1111	Power and Control Cable
1CF676	Control Cable
1CF677	Control Cable
1EOC503	Control Cable
1EOC501	Control Cable
1CF675	Control Cable
1AD509	Control Cable
1CF674	Control Cable

During the walkdown of the cable routings, it was noted that at the wall of the turbine building where the cables from the SSS facility enter the turbine building, the cables are routed down to cable trays approximately 10' to 15' below the point of entry. The cables appear to exceed the licensee's recommended unsupported cables lengths. This condition also exists at the point were the cables leave the cable trays and rise to the exit point from the turbine building into the auxiliary building. This condition is a part of Inspector Followup Item (IFI) (413/84-46-09), SSS Potential Electrical Discrepancies.

(2) Electrical Equipment Walkdown

The examination of the installation of the equipment used to electrically disconnect the power from certain solenoid operated valves revealed one condition that could present a time delay in disconnecting the power to the "A" train solenoid operate valves. The enclosure containing this disconnect has several screw secured clamps around the door which would require the use of a screwdriver to obtain access. Under emergency operating conditions, it is possible that the operator would not have access to the necessary hand tools. This is included as part of Inspector Followup Item (413/84-46-09).

During fire emergencies premature opening of the RHR suction valves could occur due to fire induced faults. To insure that this event does not occur during SSS operation, procedural controls should be established to open the breakers to these valves when SSF/SSS operation is initiated. This item is part of Inspector Followup Item (413/84-46-09).

In summary, IFI 413/84-46-09, SSS Potential Electrical Discrepancies, contains the following items:

1. Review/Correct installation of unsupported SSS cables length conditions.

2. Provide an enclosure cover for easy access to train "A" solenoid operated valves disconnects.

3. Provide procedural controls for opening of RHR suction valve breakers when SSS operation is initiated.

(3) Incore Thermocouple Cable Walkdown

The routing of the incore thermocouple (TC) cables inside containment do not meet the 20' physical separation requirement for trains "A" and "B" and the SSS cables. The licensee has used Mineral Insulated (MI) cable and has advised NRR that this cable is qualified to serve as a radiant energy shield. In an April 30, 1984 telephone conversation with NRR/CMEB reviewers, the inspectors were informed that the MI cables as installed inside containment at the Catawba facility has been reviewed and is to be accepted as a noncombustible radiant energy shield and thus meets the fire protection separation requirements of Appendix R, Section III.G.2. Therefore, this item is acceptable.

c. Fire Prevention/Protection Modifications

The inspectors reviewed several fire prevention/protection modifications provided for the SSS and SSF. The following items were reviewed:

(1) SSF Diesel Generator Sprinkler System

The SSF Power System is provided with standby power from a dedicated diesel generator. The SSF diesel generator and diesel generator room are protected by a closed head wet pipe sprinkler system. The July 5, 1983 submittal stated that the diesel generator room ventilation during diesel operation is provided by the engine mounted radiator cooling fan, and room conditions will vary according to outdoor air temperature. It was the inspectors' concern that during severe cold weather, adequate heat may not be maintained within the diesel generator room to prevent the sprinkler system from freezing when the diesel is operating for several days. The licensee is to reevaluate this item to assure that the sprinkler system operation will not be degraded during cold weather operation. This is identified as Unresolved Item (413/84-46-10), Reevaluation of SSF Diesel Generator Sprinkler System Operation During Cold Weather, and will be reviewed during a subsequent NRC inspection.

(2) SSF Diesel Generator Fuel Oil Supply System

The July 5, 1983 submittal of information in support of the Catawba SSF/SSS states that the fuel oil supply equipment and piping associated with the recirculation loop and day tank are located within a retaining wall to control spreading of fuel oil due to spills or leaks. Presently, portions of the fuel oil lines to the diesel generator engine are located outside the engine diked area. The licensee is to reevaluate this condition to assure compliance with the submittal. This is identified as Unresolved Item (413/84-46-11), Reevaluation of Fuel Oil Line Arrangement to SSF Diesel Engine and will be reviewed during a subsequent NRC inspection.

(3) SSF Control Room Eight Hour Emergency Lighting

The Duke July 5, 1983 submittal states that self-contained 12 VDC battery pack lighting units are located in the SSF to provide adequate level of lighting for control panel operation and for entering and leaving the structure. Presently, no eight-hour emergency lighting units are installed within the SSF. The licensee is to perform a complete evaluation of the Catawba eight-hour emergency lighting to assure compliance with the requirements of 10 CFR 50, Appendix R. In addition, the licensee is to provide the NRC with documentation to verify that the 12 VDC battery pack lighting units are rated at eight-hour capacity. This is another example of an existing Unresolved Item (413/84-36-01), Inadequate Number of Eight-Hour Emergency Lighting Units.

(4) Turbine Driven Auxiliary Feedwater Pump Room Fire Barrier

The existing turbine driven auxiliary feedwater pump is utilized in the SSS to maintain adequate secondary side volume. A review of the Fire Hazards Analysis for Fire Areas 39 and 40 and the associated reference Drawings CFP-2 and CN-1200-5.4 indicated that the pump is enclosed by reinforced concrete walls and floor and a ceiling consisting of a concrete hatch at elevation 543.0 to provide three hour rated barrier separation (Fire Area 40 from Fire Area 39).

The inspectors examined Fire Area 40 for compliance with Appendix R fire protection/separation requirements. It was observed that the enclosure for the Turbine Driven Auxiliary Feedwater Pump (Fire Area 40) is not three hour fire rated as required by Duke's Appendix R review and Appendix R Section III.G.2. due to unprotected steel which supports the concrete hatch cover . The licensee is to provide a revised fire hazards analysis for this area to assure that the appropriate intent of Appendix R, Section III.G.2 are met. This is identified as Unresolved Item (413/84-46-12), Evaluation of Fire Barrier Requirements for Turbine Driven Auxiliary Feedwater Pump Room. The licensee's analysis and resultant corrective actions, if any, will be reviewed on a subsequent NRC inspection.

(5) Fire Barrier Enclose Cable Wraps and Penetration Seals

The inspectors reviewed the installation of fire barrier seals for several large cable penetration openings. The Duke sealing method provided for the division of large openings into sections of a maximum size which had been fire tested in the laboratory. The separation had been accomplished by installing tubular steel across the opening and coating it with Pyrocrete in accordance with a UL design configuration for beam protection. The sections were then filled with RTV Foam and covered with ceraboard in accordance with the tested configuration. One hour fire barrier cable tray and conduit wraps were being installed on one train of redundant cables for the Turbine Driven Feedwater Pump Room in Fire Area 39 to protect that train from fire exposure as required by 10 CFR 50 Appendix R Section III.G.

The inspectors obtained copies of the test reports for both the cable wrap and penetration seal designs to permit a review and evaluation by members of the NRC Region II staff. In an April 30, 1984 telephone conversation with NRR/CMEB reviewers, the Region II inspectors were informed that these tests reports had been reviewed and found to be acceptable.

(6) Redundant Shutdown Cables - Fire Area 39

The inspectors examined Fire Area 39 for compliance to Appendix R Section III.G fire protection and/or suppression requirements. This fire area extends over the two motor driven feedwater pump pits and the concrete hatch for the Turbine Driven Feedwater Pump Room. Redundant shutdown cables associated with the SSS are routed above the hatch area and were not separated by more than 20 feet. One shutdown division in this area was being completely enclosed in a one hour fire rated barrier wrap. This area over the concrete hatch, however, was not equipped with a complete, area-wide fire detection and fire suppression system as required by Appendix R, Section III.G.2.c. This is identified as Unresolved Item (413/84-46-15), Possible Failure to Provide Fire

Protection Features for Redundant Shutdown Cables. The licensee is to analyze this condition and take appropriate corrective action and/or prepare a deviation request. This analysis will be reviewed by Region II staff for adequacy and the fire area will be reexamined on a subsequent inspection.

(7) Combustibility of Ductwork Thermal Insulation Material

In several safety-related areas the inspectors noticed a black foam insulation material was installed on HVAC ducts. The manufacturer was identified as Rubatex Corporation. Duke committed in their response to Appendix A, BTP 9.5-1, Section C.4.a(4) that interior finishes were to have a flame spread rating of 25 or less and a smoke and fuel contribution of 50 or less in its use configuration. Manufacturer's data on the duct insulation material was not available on site for review. However, the licensee stated that according to preliminary information the insulation material had a flame spread of less than 25, but the smoke contribution was greater than the rating of 50 required by their commitment.

The inspectors informed the licensee that they should provide the Region II staff with the manufacturer's data on the insulation material. This condition is identified as Unresolved Item (413/84-46-16), Possible Deviation From a Commitment on Combustibility of Thermal Insulation Material, pending receipt and review of the manufacturer's data on the installed insulation material.

Within the areas examined, no apparent violations or deviations were identified.